

## ABSTRACT OF THE DISCLOSURE

2 An ultrasound imaging method and system configured to simultaneously acquire and process  
3 multi-mode and multi-band echo information from a single set of pulse firings. Raw ultrasound  
4 signals are digitized and stored in an I/Q data buffer. The stored data are then parallel  
5 preprocessed as a function of frequency band or alternative encoding. Parallel preprocessing  
6 optionally includes manipulating the data in respect to different imaging modes. Outputs of the  
7 parallel preprocessors are coupled to separate echo formers used to simultaneously reconstruct  
8 various desired echo information to form a multi-mode or multi-band image. The echo  
9 formation process is optionally preformed in parallel.